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No. 58A. VISCACEAE
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Conspectus of Families of Vascular Plants Represented in the Flora of New South Wales

(The account of each family, or consecutive group of families as issued, will appear with separate pagination; the names of those families that have been published to date are in italics.)

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NEW SOUTH WALES
DEPARTMENT OF AGRICULTURE

FLORA OF NEW SOUTH WALES

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FLORA OF NEW SOUTH WALES

Produced under the Direction of
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Royal Botanic Gardens,
Sydney

No. 58A VISCACEAE

by
B. A. BARLOW

EDITOR: MARY D. TINDALE

Formerly produced under the direction of R. H. Anderson, 1961–1964

58A. VISCACEAE

By B. A. Barlow*

Flinders University of South Australia, Bedford Park, South Australia

Flowers usually less than 2 mm long, unisexual, perianth of a single whorl. *Perianth segments* 2 to 4, valvate. *Stamens* opposite the perianth segments, adnate to them or free; anthers 1- to many-locular, opening by pores; pollen spherical. *Ovary* inferior, 1-locular, with a short placental column containing the sporogenous cells; ovules absent; embryo sac single, developing from one cell of a dyad (*Allium*-type), confined to the placental column or extending into the adjacent ovary tissue. *Fruit* baccate, the viscous layer within the vascular bundles; cleavage of the zygote usually transverse; suspensor absent or very short.

Hemiparasitic shrubs on the branches of trees (mistletoes); haustorial attachment single, without runners. *Leaves* opposite, mostly curvinerved, sometimes absent.

A family of seven genera and 300-400 species, widespread in all continents. The family has its richest development in the tropics, especially in America, but is also well represented in temperate regions of the northern hemisphere, and to a much lesser extent in the southern hemisphere. There are eleven species from three genera in Australia. The Viscaceae are of no known economic importance; *Viscum album*, the traditional European mistletoe, and *Phoradendron flavescens*, its North American counterpart, are sold as Christmas symbols.

For an account of the elevation of Loranthaceae subfam. Viscoideae to family status as Viscaceae, see Barlow in Proc. Linn. Soc. N.S.W. 89: 268–272 (1965). Four genera formerly placed in Loranthaceae subfam. Viscoideae tribe Eremolepideae are currently excluded from the Viscaceae. *Lepidoceras* is now placed in Loranthaceae and *Eremolepis*, *Antidaphne* and *Eubrachion* are distinguished as the family Eremolepidaceae (Kuijt in Brittonia 20: 136–147 (1968)).

1. Leafless plants with angular or flattened stems.
    2. Successive internodes strongly flattened in the one plane. Flowers minute (c. 0·3 mm long), borne in dense clusters on the shoulders of the internodes .... *Korthalsella* 1.
    2.* Internodes angular, the flattening of the successive ones being at right angles. Flowers 1–2 mm long, borne laterally in triads (dichasia) .... *Viscum* 2.

1.* Leafy plants with terete stems .... *Notothixos* 3.

1. KORTHALSELLA Tiegh.

Flowers minute, monoecious, in groups in the leaf axils and surrounded by hairs, the flowers in each group developing successively. *Male flowers* globular, usually 3-merous; perianth segments triangular. *Anthers* globular, 2-locular, introrse, sessile on the perianth segments, connate into a synandrium and shedding the pollen through a common apical pore. *Female flowers* pear-shaped, usually 3-merous; perianth segments triangular. *Stigma* nipple-shaped. *Fruit* ellipsoidal,

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crowned by the persistent perianth segments; seeds dispersed by a weak explosive mechanism. *Very small erect shrubs or herbs;* stems strongly-articulate, usually flattened and green; leaves rudimentary, often fused into a collar at the apex of each internode.

A genus of 23 species and several varieties with a wide distribution in the Old World tropical and temperate zones, ranging from Madagascar, Ethiopia and southern Asia to New Zealand, Hawaii and Henderson Is. No other genus in any mistletoe family has attained such a wide distribution in the remote islands of the Indian and Pacific Oceans. For a critical revision of the genus, see Danser in Bull. Jard. Bot. Buitenz. 14: 115–159 (1937); 14: 329–342 (1940). There are two species in Australia, one (*K. japonica*) being recorded for New South Wales and Lord Howe Island, and another from Southern Queensland. A third species is endemic in Norfolk Island. These three taxa are dealt with below.

1. Internodes much longer than broad, tapering at each end so that the nodal articulations are distinct. Branches not all flattened in the one plane.
    2. Whole plant usually up to 10 cm long, rarely up to 25 cm long. (Widespread) .... *K. japonica* 1.
    2.* Whole plant up to 60 cm long. (Norfolk Island) .... *K. disticha* 2.

1.* Internodes about as broad as long, hardly narrower at the ends, so that the nodal articulations are not distinct. Branches all flattened in the one plane. (S. Queensland) .... *K. breviarticulata* 3.

1. Korthalsella japonica (*Thunb.*) *Engl.*, Pflanzenfam. Nachtr. 138 (1897); Eichler, Suppl. Black's Fl. S. Austral. 103 (1965).

Synonymy: *Viscum opuntia* Thunb., Fl. Jap. 64 (1784), nom. illegit.; *Viscum japonicum* Thunb. in Trans. Linn. Soc. 2: 329 (1794); *Bifaria howensis* Tiegh. in Bull. Soc. Bot. France 43: 171 (1896); *B. rubra* Tiegh., l.c. 173; *B. japonica* (Thunb.) Tiegh. l.c. 173; *Korthalsella howensis* (Tiegh.) Engl., Pflanzenfam. Nachtr. 138 (1897); Blakely in Proc. Linn. Soc. N.S.W. 53: 32, 35, t. 2B, f. 8–15 (1928); *Pseudixus japonicus* (Thunb.) Hayata in Bot. Mag. Tokyo 29: 31 (1914); *Korthalsella opuntia* (Thunb.) Merr. in Bot. Mag. Tokyo 30: 69 (1916), nom. illegit.; Danser in Bull. Jard. Bot. Buitenz. 14: 134, t. 8 (1937); 16: 333 (1940); Barlow in Proc. Linn. Soc. N.S.W. 87: 58 (1962); Beadle, Evans and Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 311 (1963); *Bifaria opuntia* (Thunb.) Merr., Enum. Phil. Fl. Pl. 2: 113 (1923) nom. illegit.; *Korthalsella articulata* Blakely in Proc. Linn. Soc. N.S.W. 53: 32, 33, t. 1 (1928); Gardner, Enum. Plant, Austral. Occ. 78 (1930); *Korthalsella brassiana* Blakely in Proc. Roy. Soc. Queensl. 47; 79 (1936). For further synonymy see Danser, l.c.

Misapplied Name: Bentham, Fl. Austral. 3: 396 (1866) misapplied *Viscum articulatum* Burm. f. (in part) to *V. japonicum* Thunb. He was followed by F.M. Bail., Queensl. Fl. 5: 1382 (1902); and Moore & Betche, Handb. Fl. N.S.W. 227 (1893).

Distribution: North and Central Coast, extreme east of Central Tablelands, North and Central Western Slopes and nearer Western Plains, also Lord Howe Island. Parasitic on several host species, but most frequently parasitizing *Geijera parviflora* in the western parts of its range. In the coastal areas it occurs on rainforest species.

Stems strongly flattened and cladode-like, much branched, the individual stems orientated transversely to the parent stem; main axis (4)–7–12–(20) cm long; internodes narrow-spathulate to ovate-spathulate, (0·6)–1·0–1·6–(3·0) x (0·3)–0·5–1·0 cm; midvein prominent and sometimes one or two pairs of lateral veins visible but less prominent. *Flower groups* at the shoulders of all internodes except the basal ones, each initially enclosed by the membranous scale leaf, the older inflorescences extending toward the midline of the stem but not completely encircling it. *Chromosome number:* $n = 14$ (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963), from Queensland materials under *K. opuntia*). Fl. Sept.-Nov.; fr. Apr.-June.

NORTH COAST: Bungabbee, between Casino and Lismore, *Green* 4.1956 (80504); Wyrallah, *Bäuerlen 773a*, 3.1892 (80505); Port Macquarie, *Betche* 2.1882 (80506); Manning R. district, *Brown* 1.1892 (80507); Wingham, *Fraser* 3.1912 (80508); Sugarloaf road, c. 5 miles [8 km] by road from Dungog towards Gresford, *Blaxell* 10.1969 (88176); Weston (near Cessnock), *Hamilton* 4.1914 (80525). CENTRAL COAST: Mt Keira, 11.1965 (80511); Mt Kembla, Illawarra, *Fletcher* 6.1888 (20558); S. of Mt Kembla, *O'Meley* 8.1952 (80515); Kiama, *Alkin* 8.1905 (80514); Good Dog Mountain, Cambewarra Range, *Rodway* 8.1942 (89497); Cambewarra, *Monaghan* 9.1923 & 5.1923 (89498; 89499); Cambewarra, near Nowra, *Rodway* 9.1923 (80513). CENTRAL TABLELANDS: Road to Mt Irvine, *Gregson* 4.1907 (80509); Mt Irvine, *Hamilton* 5.1924 (80510); Colong Caves, *Fraser & Vickery* 10.1933 (89494). NORTH WESTERN SLOPES: Leard State Forest, near Boggabri, *Burrow* 6.1918 (80534; 80535); Plains near Baradine, *Forsyth* 10.1899 (80519); Little Sugarloaf Mtn., near Gunnedah, *Johnson & Constable* 11.1954 (32027); Porcupine Lookout, Gunnedah, *McGillivray* 11.1962 (76089); Porcupine Bridge, Gunnedah, *Froggatt* 8.1899 (80532); Gunnedah, *Boorman* 6.1907 & 9.1910 (80530; 80531); 15 miles [24 km] SW. of Gunnedah, *Simon* (80529); Tambar Springs, *per Hazlewood Brothers* 10.1937 (80528); Myall brush, NW. of the Liverpool Range, *Leichhardt* (80527). CENTRAL WESTERN SLOPES: Page R., Murrurundi district, *Maiden* 8.1899 (80526); c. 20 miles [32 km] NNE. of Trundle Railway Station, *de Plevitz* 12.1917 (80536); Blow Clear West State Forest, 10 miles [16 km] N. of Bogan Gate, *Love* 7.1918 (20537). WESTERN PLAINS: Baan Baa, *Boorman* 10.1914 (80533); Biniguy, *Manchee* 5.1939 (80523; 80524; 80630); Wee Waa, *Withers* 9.1920 (80521); 1½ miles [2·4 km] from Wee Waa, *Taylor* 8.1916 (80520); Narrabri, *Musson* 6.1897 (80522); Coonamble, *London per Munns* 10.1951 (80518); Nyngan, *Froggatt* 11.1921 (20556); "Plain View", Nevertire, *Robards* 2.1920 (80537); near Tottenham, *Hadley* 1.1933 (20557). LORD HOWE ISLAND: Lord Howe Island, *Maiden* 4.1898 (130152); Lord Howe Island, *Boorman* 5.1920 (130152; 130154; 130155); Lord Howe Island, *McComish* 10.1936 (130156); Lord Howe Island, *Darnell-Smith* 10.1928 (130157); Lord Howe Island, *Watts* 8.1911 (130158).

Its small size notwithstanding, *K. japonica* may form dense populations on the host trees, which may eventually die. *K. japonica* is a very polymorphic and widespread species, occurring in coastal and tablelands districts of Queensland and in inland South Australia, and further distributed to Mauritius, Madagascar and Ethiopia, the Himalayas, China and Japan. The specimens from Lord Howe Island, though rather larger than most varieties of *K. japonica*, and treated as a distinct species by Blakely (l.c.), were retained under *K. opuntia* (= *K. japonica*) by Danser. For further details see Danser l.c. See also note under *K. disticha*.

2. Korthalsella disticha (*Endl.*) *Engl.*, Pflanzenfam. Nachtr. 138 (1897); Danser in Bull. Jard. Bot. Buitenz. 14: 143 (1937).

SYNONYMY: *Viscum distichum* Endl., Prodr. Fl. Norfolk. 61 (1833); *Bifaria disticha* (Endl.) Tiegh. in Bull. Soc. Bot. France 63: 171 (1896); *B. bigibba* Tiegh., l.c.; *Viscum opuntia* var. *distichum* (Endl.) Domin in Bibl. Bot. 22: 604 (1921); *Korthalsella opuntioides* Blakely in Proc. Linn. Soc. N.S.W. 53: 32, 37, 38 t. 3, f. 1–11 (1928); *K. bigibba* (Tiegh.) Blakely l.c. 32, 38, t. 3, f. 11–12.

DISTRIBUTION: Norfolk Island.

Stems strongly flattened; main axis up to 50 cm long; internodes obovate to obovate-lanceolate or oblong, the larger ones 25–65 x 9–35 mm, the smaller ones c. 10 x 3 mm; visible veins up to 7. *Flower groups* at the shoulders of all internodes except the basal ones, soon emerging from the axils, the older inflorescences sometimes reaching the midline of the stem but never completely encircling it. (Description after Danser, l.c.)

I have seen no specimens of this species, and follow Danser (l.c.) in this treatment. Danser commented on the large dimensions of all parts, and stated that it is probably "only an extreme variety of *K. opuntia*" (= *K. japonica*). It is probably significant in this respect that the large specimens of *K. japonica* from Lord Howe Island approach *K. disticha* in their general dimensions.

3. **Korthalsella breviarticulata** (*Tiegh.*) *Danser* in Bull. Jard. Bot. Buitenz. 16: 339, pl. 4 (1940).

SYNONYMY: *Bifaria breviarticulata* Tiegh. in Bull. Soc. Bot. France 43: 173 (1896); *Viscum australe* F.M. Bail. in Queensl. Agr. J. 26: 119 (1911); *Korthalsella australis* (F.M. Bail.) Blakely in Proc. Linn. Soc. N.S.W. 53: 32, 35, t. 2A, f. 1–7 (1928); Danser in Bull. Jard. Bot. Buitenz. 14: 153 (1937).

MISAPPLIED NAME: The name *Viscum articulatum* Burm. f. (in part) was misapplied to this species by Bentham, Fl. Austral. 3: 396 (1866).

DISTRIBUTION: Queensland.

Stems strongly flattened and cladode-like, the branches flattened in the same plane as the parent stem; main axis up to 7 cm long; internodes almost rectangular or square, not sharply distinct from the adjoining ones, 10–15 x 10–20 mm. *Flower groups* at the shoulders of all internodes except the basal ones, the opposite groups even when fully developed not growing toward each other. *Chromosome number:* $2n$ = c. 28 (Barlow in Proc. Linn. Soc. N.S.W. 88: 151–160 (1963), from Queensland materials).

Known from several localities on the Darling Downs, often parasitic on *Heterodendrum diversifolium.* This species may occur in adjoining tablelands districts of northern New South Wales.

2. VISCUM L.

Inflorescences axillary or terminal, consisting of cymose spikes or triads of flowers, each cyme usually including both male and female flowers; cymes usually subtended by a boat-like pair of opposite connate bracts. *Male flowers* usually 4-merous; anthers sessile on the perianth segments, irregularly multilocular, each cell opening separately by a pore. *Female flowers* usually 4-merous, cylindrical; stigma small, sessile. *Leafy or leafless herbs or shrubs,* usually glabrous.

A genus of about 100 species, widely distributed in the Old World, but with the greatest development in the tropics, especially in Africa. There are five species in Australia, one occurring in New South Wales. For a revision of the Asian-Australian species, see Danser in Blumea 4: 261–319 (1941).

Viscum articulatum *Burm. f.*, Fl. Ind. 211 (1768); Danser in Blumea 4: 280 (1941); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 312 (1963).

SYNONYMY: *Aspidixia articulata* (Burm. f.) Tiegh. in Bull. Soc. Bot. France 43: 193 (1896). For further synonymy see Danser, l.c.

MISAPPLIED NAME: The name *Viscum angulatum* Heyne was misapplied to this species by Bentham, Fl. Austral. 3: 396 (1866) and this usage was followed by Moore & Betche, Handb. Fl. N.S.W. 227 (1893); F.M. Bail., Queensl. Fl. 5: 1382 (1902); Ewart & Davies. Fl. N. Terr. 78 (1917); Blakely in Proc. Linn. Soc. N.S.W. 53: 47, t. 9 (1928).

Distribution: North and Central Coast, also in Queensland, Northern Territory, New Guinea and thence to India and China. Almost exclusively parasitic on Loranthaceous mistletoes and on *Notothixos*.

Glabrous, leafless, pendulous shrubs. *Stems* slender, strongly articulate, up to 1 m long; internodes (except the basal ones) strongly flattened-quadrangular, the successive internodes orientated at right angles, 2–7 x 0·2–0·5 cm. *Inflorescences* sessile in the axils of the scale leaves, consisting of a central female flower developing first and 2-4 male or female flowers developing successively in lateral positions. *Male flower* flattened-globular, c. 1 mm long; perianth segments 3 or 4, triangular. *Female flower* cylindrical, 1·5–2 mm long; perianth segments 3 or 4, triangular, deciduous. *Fruit* globular, yellow or white. *Chromosome number:* $n = 12$ (Steindl in Schweiz. Bot. Gesell. Ber. 44: 343–388 (1935) from Javan material; Barlow in Proc. Linn. Soc. N.S.W. 88: 151–160 (1963) from Queensland material).

North Coast: Cudgen, *McKee* 9538, 7.1962 (80603); Casino, *Irby* 3.1917 (80608); Ballina, *Bäuerlen 911a*, 10.1892 (80609); Mt Harriet, Ramornie, Copmanhurst district, *Blakely & Shiress* 7.1922 (80606); Sugar Loaf, 5 miles [8 km] W. of Ramornie, *Blakely & Shiress* 7.1922 (80607; 20540); Blaxlands Creek, Grafton to Nymboida, *McKee* 8.1957 (80605); Pacific Highway, 8 miles [13 km] S. of Urunga, *Coveny 2153*, 9.1969 (88157). Central Coast: Glenbrook, *Devaney* 9.1931 (80604). Also in Queensland, Northern Territory, New Guinea and thence to India and China.

3. NOTOTHIXOS Oliv.

Inflorescence terminal, composed of fan-like cymes of sessile flowers, the cymes solitary or aggregated in larger inflorescences which resemble racemes or spikes but which have terminal cymes; cymes including both male and female flowers, with the male flowers central, or all female. *Male flower* globular, usually 4-merous; perianth segments persistent; anthers reniform, multilocular with each cell opening separately by a pore, inserted on a short filament at the base of the perianth segment. *Female flower* cylindrical, 4-merous; style shortly conical or nipple-shaped. *Small, much-branched shrubs* with opposite curvinerved leaves; whole plant or at least the young parts densely covered with stellate hairs.

A genus of about 10 species distributed from Ceylon to Australia. Four species occur in Australia, three of them endemic and these three occurring in New South Wales.

1\. Inflorescence 1·5–4 cm long, consisting of 3–6 pairs of fan-like cymes and a terminal cyme on a common axis. Older vegetative parts ± glabrous. Host not another mistletoe .... *N. cornifolius* 1.

1.* Inflorescence less than 1 cm long, consisting of at most 3 fan-like cymes. Whole plant densely stellate hairy or the older parts sparsely hairy and/or glaucous.

    2. Inflorescence a solitary 3-flowered cyme. Indumentum white. Usual hosts *Melaleuca* and *Callistemon* .... *N. incanus* 2.

    2.* Inflorescence composed of 2 lateral and 1 terminal cymes, each including 3–7 flowers. Indumentum mostly golden, rarely almost white. Usual hosts other mistletoes .... *N. subaureus* 3.

1. Notothixos cornifolius *A. Cunn. ex Oliv.* in J. Linn. Soc. 7: 103 (1864); Benth., Fl. Austral. 3: 397 (1866); F.M. Bail., Queensl. Fl. 5: 1383 (1902); Blakely in Proc. Linn. Soc. N.S.W. 53: 40, t. 4B, f. 11–22 (1928).

Synonymy: *Notothixos cornifolius* var. *angustifolia* Oliv. in J. Linn. Soc. 7: 103 (1864); *Phoradendron xanthophyllum* A. Cunn. ex Ettingsh. in Denks. Akad. Wiss. Math.-Nat. 32: 55, t. 3, f. 16, 17 (1871).

Misapplied Name: The name *N. incanus* (Hook.) Oliv. was partly misapplied to this species by Moore & Betche, Handb. Fl. N.S.W. 227 (1893).

Distribution: North Coast, western edge of Central Coast (Capertee Valley) and Western Slopes south to Burrinjuck, also extending to northern Queensland. Usually parasitic on *Brachychiton populneum*, occasionally on other Sterculiaceae-Sterculioideae.

Glabrous except for the young parts, inflorescences and flowers densely golden-tomentose. *Leaf-lamina* oblong to almost ovate, (3)–4–8 x 1–2–(4) cm, acute to rounded but usually with a minute point at the apex, attenuate at the base, distinctly curvinerved; petiole 5–10 mm long. *Inflorescence* terminal but sometimes on a short lateral stem and appearing axillary; axis 1·5–4 cm long, bearing 3–6 pairs of opposite cymose fans on peduncles 3–5 mm long and a terminal cluster; flowers all sessile, usually 5 in the cyme, all female or with the central and rarely lateral flowers male; bracts single at the base of each peduncle and opposite in pairs at the base of each fan, narrow, acute, 1 mm long. *Female flowers* 4-merous; perianth segments triangular, 1 mm long; ovary 2–3 mm long. *Fruit* narrow-ellipsoidal to funnel-shaped, 4–6 mm long. Fl. Apr.-Oct.; fr. June.

North Coast: Wilsons Creek, Lismore-Byron Bay road, E. of Lismore near Bexhill, *Blaxell 282 & Pickard*, 4.1969 (87946); Lions Club Park, near Lismore, *McGillivray* 5.1964 (80541); Lismore, *Bäuerlen* 11.1894 (80542); Duck Creek, 2 miles [3·2 km] S. of Alstonville, *Constable 6473A*, 11.1965 (84480); Coramba, *Tomlins* 1917 (80627). Central Coast: Coco Creek to Crown Creek, Capertee Valley, *Johnson* 4.1955 (31233); Capertee Valley, 8 miles [13 km] E. of Capertee, *Briggs* 8.1961 (56393). North Western Slopes: Tamworth, 10.1935 (80543); "Lowestoft", 27 miles [43 km] S. of Tamworth, near highway, *Constable* 4.1956 (37325); Warrah (Willow Tree district), *Froggatt* 10.1920 (80544); Razorback Range, 34 miles [54 km] WSW. of Quirindi, *Pickard & Coveny 1123*, 6.1969 (88090); range between Henry's Creek and Coomoo Coomoo Creek, W. of Razorback Range, c. 38 miles [61 km] WSW. of Quirindi, *Pickard & Coveny 1138*, 6.1969 (88091). Central Western Slopes: "Talooby", near Bylong Creek, *Baker* 10.1893 (80545); Rocky Ridge, N. of Growee Creek [N. of Rylstone, a branch of the Upper Goulburn R.], *McKee* 10.1952 (80546); Growee Gulph, 13 miles [21 km] NE. of Rylstone, *Story* 6872, 10.1959 (80547). South Western Slopes: Burrinjuck, *Cheel* 1.1912 (80548; 80549). Also extending to northern Queensland.

2. Notothixos incanus (*Hook.*) *Oliv.* in J. Linn. Soc. 7: 103 (1864); Benth. Fl. Austral. 3: 397 (1866); Moore & Betche Handb. Fl. N.S.W. 227 (1893); F.M. Bail., Queensl. Fl. 5: 1382 (1902); Blakely in Proc. Linn. Soc. N.S.W. 53: 43, t. 4A, f. 1–10, (1928).

Synonymy: *Viscum incanum* Hook., Ic. Pl. t. 73 (1837).

Distribution: North Coast, south to Kendall, also in coastal south Queensland. Usually parasitic on *Melaleuca* and *Callistemon* spp.

Glaucous; young parts, inflorescences and flowers densely white-tomentose, the tomentum disappearing with age from the vegetative parts. *Leaf lamina* cuneate-spathulate, 2–4 x 0·3–1·0 cm, rounded but shortly pointed at the apex, gradually attenuate at the base, obscurely curvinerved; petiole obscure, 2–4 mm long. *Inflorescence* consisting of a solitary terminal 3-flowered cyme on a peduncle c. 2 mm long; flowers sessile, all female or the central one male; bracts two, opposite at the base of the cyme, narrow, acute, 1 mm long. *Flowers* 2–3 mm long. *Chromosome number:* $n =$ c. 12 (Barlow in Proc. Linn. Soc. N.S.W. 88: 151–160 (1963), from Queensland materials). Fl. July-Aug.; fr. Dec.

North Coast: Casino, *Irby* 3.1917 (80552); Casino, *McAuliffe* 12.1910 (80628); Casino on the Richmond R., *Betche* 8.1889 (20543); Glenugie Creek, 7 miles [11 km] S. of Grafton, *McKee 5764*, 8.1957 (80551); Port Macquarie, *Maiden* 7.1893 (80550); Kendall, *Cleland* 3.1918 (20544). Also in coastal south Queensland.

3. Notothixos subaureus *Oliv.* in J. Linn. Soc. 7: 103 (1864); Benth., Fl. Austral. 3: 397 (1866); Blakely in Proc. Linn. Soc. N.S.W. 53: 41, t. 6 (1928); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 312 (1963).

Synonymy: *Viscum incanum* Hook. var. *aureum* Ettingsh. in Denks. Akad. Wiss. Math.-Nat. 58: t. 1, f. 9 (1871); *Notothixos incanus* var. *subaureus* (Oliv.) Moore & Betche, Handb. Fl. N.S.W. 227 (1893); F.M. Bail., Queensl. Fl. 5: 1383 (1902).

Distribution: Coast and less commonly North and Central Western Slopes, also extending to coastal northern Queensland, and in extreme eastern Victoria. A secondary parasite on Loranthaceous mistletoes, especially *Muellerina* spp., *Amyema congener* and *Dendrophthoe vitellina.*

Young parts, inflorescences, undersides of the leaves and frequently the whole plant densely golden (rarely almost white) stellate-hairy. *Leaf lamina* oblong to ovate or rhomboidal, (1)–2–4 x (0·5)–1–3 cm, acute or less frequently rounded at the apex, attenuate at the base; petiole 2–5 mm long. *Inflorescence* terminal, consisting of three fan-like cymes of flowers on a common peduncle 1–2–(4) mm long; cymes 3- to 7- (usually 5-) flowered with the male flowers near the centre; terminal cyme the oldest, on a peduncle 5–7 mm long; lateral cymes spreading or reflexed, on peduncles 2–4 mm long; bracts 0·5 mm long. *Chromosome number:* n = c. 12 (Barlow in Proc. Linn. Soc. N.S.W. 88: 151–160 (1963), from Queensland materials). Fl. most of year; fr. most of year.

North Coast: Acacia Creek, *Dunn* 3.1906 (20546); Tweed Heads, *Boorman* 1.1914 (84159); Cudgen, *McKee 9537*, 7.1962 (84158); Richmond R., *Watts* 2.1900 (84157); Richmond R., *Fawcett* c. 1876 (84156); c. 2 miles [3·2 km] W. of Kyogle, *Salasoo 2621*, 1.1963 (84155); Ballina, *Bäuerlen* 2.1896 (84154); Tintenbar road, 3¾ miles [6 km] from Ballina, *Watts* 6.1902 (20548); Iluka, *Cameron* 8.1966 (92511); Junction Copmanhurst, Eatonsville roads, *Blakely & Shiress* 7.1922 (84153); Mt Mulligan, 4 miles [6·4 km] E. of Ramornie, Copmanhurst district, *Blakely & Shiress* 7.1922 (84152); Blaxlands Creek, Grafton to Nymboida, *McKee 5714*, 8.1957 (84151); Glenugie, *Oxenford* 8.1948 (84150); Coramba, *Tomlins* c. 1917 (84149); Guy Fawkes R., *Whaite* 220, 5.1949 (84148); E. side of Pine Creek State Forest, near Raleigh, *McGillivray 772*, 9.1958 (98760); Macksville, *Cheel* 7.1928 (84147); Hastings R. district, *Brown* 1.1893 (84146); Manning R., *Cheel* 12.1899 (84145); c. 2 miles [3·2 km] N. of Tuncurry, *McGillivray 1265*, 8.1965 (89186); 16 miles [26 km] NNW. of Dungog, *Story* 7322, 5.1960 (84144); Bulahdelah, *Rupp* 2.1924 & 3.1924 & 3.1924 (89704; 84143; 89686); Nelson Bay, *Lithgow* 3.1965 (74303); Belmont, (S. of Newcastle), *Dwyer* 2.1920 (84142). Central Coast: Gosford, *de Beuzeville* 5.1916 (84183); Mangrove Creek, 100 yards [90 m] W. of bridge, up Oystershell road, *Pickard* 1.1969 (88153); Hawkesbury R., *Blakely & Shiress* 26.1.1918 (84179; 84180; 84181; 84182); Hawkesbury, *Deane* 9.1889 (84178); Cowan Creek, Cowan, *Blakely & Shiress* 3.1918 (84162); 24 mile [38 km] post near Cowan Station, *Blakely & Shiress* 1.1918 (84161); near 24 mile [38 km] post, Cowan, *Blakely & Shiress* 7.1921 (84160); Newport, *Cambage 1220*, 6.1905 (80584); Newport, *Maiden & Cambage* 7.1905 (80583); Newport to Pittwater, *Watts* 8.1915 (80582); Berowra Creek, *Blakely* 3.1918 (84172; 84173); Berowra Creek, near boathouse, *Blakely* 3.1918 (84171); Berowra Creek, below punt, *Blakely* 3.1918 (84174; 84175); Junction Berowra & Connellys Creek, 6 miles [10 km] from Hornsby, *Blakely* 1.1918 (84176; 84177; 80629); Foot of Crosslands Track, Berowra Creek, N. of Hornsby, *Blakely* 1.1918 (84169; 84170); Kuring-gai Chase, near Archbalds' Boathouse, *Blakely* 1.1918 (84168); Kuring-gai Chase, near Baths, *Blakely* 1.1918 (84167); Cowan Creek, Windybanks to Bobbin Head, *Blakely, Shiress & Bott* 3.1918 (84163; 20547); Bobbin Head, Kuring-gai Chase, *Blakely* 1.1918 (84166); Dee Why, *Boorman* 4.1922 (80573); Curl Curl, *Hindwood* 5.1938 (20542); Hornsby, *Blakely* 10.1917 (84165); Old Man Creek, Hornsby, *Blakely* 12.1917 (84164); Blue Mtns., *Betche* 9.1881 (80555); Blaxland, *Blakely & Chisholm* 10.1922 (80556); St Ives, *Blakely, Shiress & Bott* 4.1918 (80579; 80580; 80581); Normanhurst, *Blakely* 8.1918 (20942; 80578); Turramurra, *Blakely* 6.1917 (80576); Pymble, *Blakely* 8.1917 (80575); Killara, *Blakely* 4.1918 (80574); Pennant Hills, *Johnson 740*, 9.1946 (80577); The Spit, *Shiress* 6.1919 (80572); Nielsen Park, Vaucluse, *Blakely* 2.1918 (80568; 80569; 80570; 80571); Rose Bay, *Helms* 7.1901 (80567); Iter Australiense, *Brown* 1802–5 (80566); near Sydney, *Bray* 4.1895 (80565); Kogarah, *Camfield* 1.1900 (80564); Carrs Paddock, Carlton, *Blakely* 3.1918 (80563); Hurstville, *Camfield* 4.1901 (80562); Oatley, *Fletcher* 9.1891 (20541); Como, *Camfield* 3.1898 (80561); National Park, *Cheel* 4.1925 (80560); Waterfall, *Fraser* 7.1928 (80559). SOUTH COAST: Near Nowra, *Monaghan* 4.1924 (89702); Comerong Island, Shoalhaven, *Rodway 886*, 9.1932 (89701); Crookhaven, *Hadley* 4.1941 (89703); Currarong Creek, near Jervis Bay, *Rodway* 1.1926 (89700); Eden, *Floyd* 8.1951 (80558). NORTH WESTERN SLOPES: 6 miles [10 km] E. of Tingha (on main Guyra road), *Johnson* 5.1957 (84137); Nundle, *Burrow* 10.1916 (84136). CENTRAL WESTERN SLOPES: Murrurundi, *Blakely* 10.1911 (84140); Blandford, *Rupp* 10.1947 (84139); Terell Creek, Kars Springs, c. 25 miles [40 km] WNW. of Scone, *Pickard & Coveny 1208*, 6.1969 (88089); Scone, *Jackson* 11.1926 (84138); Belmont, 42 miles [67 km] E. of Scone, *Rupp* 6.1939 (84141). Also extending to coastal northern Queensland, and occurring in extreme eastern Victoria.

92 Droseraceae
93 Crassulaceae
94 Escalloniaceae
95 Pittosporaceae
96 Cunoniaceae
97 Davidsoniaceae
98 Rosaceae
99 Mimosaceae
100 Caesalpiniaceae
101 *Papilionaceae, Part I*
102 *Geraniaceae*
103 Oxalidaceae
104 Linaceae
105 Erythroxylaceae
106 Zygophyllaceae
107 Rutaceae
108 Simaroubaceae
109 Burseraceae
110 Meliaceae
111 Tremandraceae
112 Polygalaceae
113 Euphorbiaceae
114 Callitrichaceae
115 Anacardiaceae
116 Aquifoliaceae
117 Celastraceae
118 Siphonodontaceae
119 Hippocrateaceae
120 Stackhousiaceae
121 Icacinaceae
122 Sapindaceae
123 Akaniaceae
124 Rhamnaceae
125 Vitaceae
126 Elaeocarpaceae
127 Tiliaceae
128 Malvaceae
129 Sterculiaceae
130 Dilleniaceae
131 Eucryphiaceae
132 Hypericaceae
133 Elatinaceae
134 Frankeniaceae
135 Violaceae
136 *Flacourtiaceae, with Supplement*
137 Passifloraceae
138 Cactaceae
139 Thymelaeaceae
140 Lythraceae
141 Rhizophoraceae
142 Myrtaceae
143 Melastomataceae
144 Onagraceae
145 Haloragiaceae
146 Araliaceae
147 Umbelliferae
148 Alangiaceae
149 Ericaceae
150 Epacridaceae
151 Myrsinaceae
152 Primulaceae
153 Plumbaginaceae
154 Sapotaceae
155 Ebenaceae
156 Symplocaceae
157 Oleaceae
158 Loganiaceae
159 Gentianaceae
160 Menyanthaceae
161 Apocynaceae
162 Asclepiadaceae
163 Convolvulaceae
164 Polemoniaceae
165 Hydrophyllaceae
166 Boraginaceae
167 Verbenaceae
168 Avicenniaceae
169 Labiatae
170 Solanaceae
171 Scrophulariaceae
172 Selaginaceae
173 Bignoniaceae
174 Pedaliaceae
175 Martyniaceae
176 Orobanchaceae
177 Gesneriaceae
178 Lentibulariaceae
179 Acanthaceae
180 Myoporaceae
181 Plantaginaceae
182 Rubiaceae
183 Caprifoliaceae
184 Dipsacaceae
185 Cucurbitaceae
186 Campanulaceae
187 Lobeliaceae
188 Goodeniaceae
189 Brunoniaceae
190 Stylidiaceae
191 Compositae

PTERIDOPHYTA

192 Lycopodiaceae
193 Selaginellaceae
194 Isoetaceae
195 Psilotaceae
196 Ophioglossaceae
197 Marattiaceae
198 Osmundaceae
199 Schizaeaceae
200 Gleicheniaceae
201 *Hymenophyllaceae*
202 Cyatheaceae
203 Dicksoniaceae
204 Lindsaeaceae
205 Pteridaceae
206 Adiantaceae
207 Vittariaceae
208 *Davalliaceae*
209 *Grammitidaceae*
210 *Polypodiaceae*
211 *Aspidiaceae*
212 Thelypteridaceae
213 Aspleniaceae
214 Blechnaceae
215 Marsileaceae
216 Azollaceae
217 Salviniaceae